UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/757,931 | 01/15/2004 | Jason A. Trachewsky | BP3184 | 6344 |

34399 7590 04/19/2006

GARLICK HARRISON & MARKISON LLP
P.O. BOX 160727
AUSTIN, TX 78716-0727

| EXAMINER | |
|---|---|
| LE, NHAN T | |
| **ART UNIT** | **PAPER NUMBER** |
| 2618 | |

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/757,931 | TRACHEWSKY ET AL. | |
| | Examiner | Art Unit | |
| | Nhan T. Le | 2618 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *15 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-9, 11, 12* is/are rejected.

7)☒ Claim(s) *4 and 10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 2, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Redfern (US 20030198299) in view of Isaksen et al (US 6,973,141).

As to claim 1, Redfern teaches a radio frequency transmitter comprises: digital encoding module operably coupled to convert outbound data into outbound symbols in accordance with a encoding protocol (see fig. 1, number 11, paragraph 0028, 0035-0037); inverse discrete Fourier transform (IDFT) module (see fig. 1, number 12, paragraph 0028, 0035-0037) operably coupled to convert the outbound symbols into a complex time domain sample sequence; digital filter (see fig. 1, number 15, paragraph 0028, 0035-0037) operably coupled to filter the time domain sample sequence to produce a filtered time domain sample sequence; digital to analog converter (see fig. 1, number 15, paragraph 0028, 0035-0037). Redfern fails to teach where the encoding module is baseband operably, the filter is complex filter, DAC is complex DAC coupled to convert the filtered complex time domain sample sequence into in-phase analog signal components and quadrature analog signal components; and radio frequency modulation module operably coupled to convert the in-phase and quadrature analog signal components into outbound radio frequency signals, wherein the complex digital

filter attenuates the complex time domain sample sequence such that signal strength of the outbound radio frequency signals in an exclusion radio frequency band is at or below a specified signal strength. Isaksen teaches where the encoding module is baseband operably (see fig 10, col. 6, lines 49-67, col. 7, lines 49-67, col. 8, lines 1-35), the filter is complex filter (see fig 10, number 170, col. 6, lines 49-67, col. 7, lines 49-67, col. 8, lines 1-35), DAC is complex DAC coupled to convert the filtered complex time domain sample sequence into in-phase analog signal components and quadrature analog signal components (see fig 10, number 182, 184, col. 6, lines 49-67, col. 7, lines 49-67, col. 8, lines 1-35); and radio frequency modulation module operably coupled to convert the in-phase and quadrature analog signal components into outbound radio frequency signals, wherein the complex digital filter attenuates the complex time domain sample sequence such that signal strength of the outbound radio frequency signals in an exclusion radio frequency band is at or below a specified signal strength (see col. 1, lines 39-59, col. 7, lines 49-67, col. 8, lines 1-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Isaksen into the system of Redfern in order to switch from passband mode to baseband mode depending on the changing nature of the input signal.

As to claim 2, the combination of Redfern and Isaksen teaches wherein the complex digital filter comprises at least one of a low pass filter (see Redfern paragraph 0035).

As to claim 6, the combination of Redfern and Isaksen teaches wherein the IDFT module comprises: an inverse fast Fourier transform (IFFT) module (see Redfern paragraph 0034).

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Redfern (US 20030198299) in view of Isaksen (US 6,973,141) further in view of Ogi et al (US 2002/0045426).

As to claim 3, the combination of Redfern and Isaksen fails to teach wherein the low pass filter comprises at least one of a multiple order Chebychev low pass filter. Ogi teaches wherein the low pass filter comprises at least one of a multiple order Chebychev low pass filter (see paragraph 0012). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Ogi into the system of Redfern and Isaksen in order to prevent spurious discharge of higher harmonic.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Redfern (US 20030198299) in view of Isaksen (US 6,973,141) further in view of Kluge et al (US 2004/0086028).

As to claim 5, the combination of Redfern and Isaksen fails to teach wherein the baseband encoding protocol comprises at least one of: IEEE 802.11g, IEEE 802.11a; and IEEE 802.11b. Kluge teaches wherein the baseband encoding protocol comprises at least one of: IEEE 802.11 (see paragraph 0001). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide

the teaching of Ogi into the system of Redfern and Isaksen in order to comply with 2.4 GHz Wlans standard.

4. Claims 7, 8, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Redfern (US 20030198299) in view of Isaksen et al (US 6,973,141) further in view of Balan et al (US 2003/0055627).

As to claim 7, Redfern teaches a radio frequency transmitter comprises: digital encoding module operably coupled to convert outbound data into outbound symbols in accordance with a encoding protocol (see fig. 1, number 11, paragraph 0028, 0035-0037); inverse discrete Fourier transform (IDFT) module (see fig. 1, number 12, paragraph 0028, 0035-0037) operably coupled to convert the outbound symbols into a complex time domain sample sequence; digital filter (see fig. 1, number 15, paragraph 0028, 0035-0037) operably coupled to filter the time domain sample sequence to produce a filtered time domain sample sequence; digital to analog converter (see fig. 1, number 15, paragraph 0028, 0035-0037). Redfern fails to teach where the encoding module is baseband operably, the filter is complex filter, DAC is complex DAC coupled to convert the filtered complex time domain sample sequence into in-phase analog signal components and quadrature analog signal components; and radio frequency modulation module operably coupled to convert the in-phase and quadrature analog signal components into outbound radio frequency signals, wherein the complex digital filter attenuates the complex time domain sample sequence such that signal strength of the outbound radio frequency signals in an exclusion radio frequency band is at or below a specified signal strength. Isaksen teaches where the encoding module is

baseband operably (see fig 10, col. 6, lines 49-67, col. 7, lines 49-67, col. 8, lines 1-35), the filter is complex filter (see fig 10, number 170, col. 6, lines 49-67, col. 7, lines 49-67, col. 8, lines 1-35), DAC is complex DAC coupled to convert the filtered complex time domain sample sequence into in-phase analog signal components and quadrature analog signal components (see fig 10, number 182, 184, col. 6, lines 49-67, col. 7, lines 49-67, col. 8, lines 1-35); and radio frequency modulation module operably coupled to convert the in-phase and quadrature analog signal components into outbound radio frequency signals, wherein the complex digital filter attenuates the complex time domain sample sequence such that signal strength of the outbound radio frequency signals in an exclusion radio frequency band is at or below a specified signal strength (see col. 1, lines 39-59, col. 7, lines 49-67, col. 8, lines 1-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Isaksen into the system of Redfern in order to switch from passband mode to baseband mode depending on the changing nature of the input signal. The combination of Redfern and Isaksen fails to teach a digital filter operably coupled to filter the outbound symbols to produce the outbound symbols. Balan teaches a digital filter operably coupled to filter the outbound symbols to produce the outbound symbols (see fig. 1, number 17, paragraph 0037). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Balan into the system of Redfern and Isaksen in order to generate an enhanced filter signal in the frequency domain.

As to claim 8, the combination of Redfern, Isaksen and Balan teaches wherein

the complex digital filter comprises at least one of a low pass filter (see Redfern paragraph 0035).

As to claim 12, the combination of Redfern, Isaksen and Balan teaches wherein the IDFT module comprises: an inverse fast Fourier transform (IFFT) module (see Redfern paragraph 0034).

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Redfern (US 20030198299) in view of Isaksen (US 6,973,141), Balan et al (US 2003/0055627) further in view of Ogi et al (US 2002/0045426).

As to claim 9, the combination of Redfern, Isaksen and Balan fails to teach wherein the low pass filter comprises at least one of a multiple order Chebychev low pass filter. Ogi teaches wherein the low pass filter comprises at least one of a multiple order Chebychev low pass filter (see paragraph 0012). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Ogi into the system of Redfern, Isaksen and Balan in order to prevent spurious discharge of higher harmonic.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Redfern (US 20030198299) in view of Isaksen (US 6,973,141), Balan et al (US 2003/0055627) further in view of Kluge et al (US 2004/0086028).

As to claim 11, the combination of Redfern, Isaksen and Balan fails to teach wherein the baseband encoding protocol comprises at least one of: IEEE 802.11g, IEEE 802.11a; and IEEE 802.11b. Kluge teaches wherein the baseband encoding protocol comprises at least one of: IEEE 802.11 (see paragraph 0001). Therefore, it would have

been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Ogi into the system of Redfern, Isaksen and Balan in order to comply with 2.4 GHz Wlans standard.

### *Allowable Subject Matter*

Claims 4, 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 4, 10, the applied reference fails to teach wherein the low pass filter comprises: a first 2.sup.nd order bi-quad stage; a second 2.sup.nd order bi-quad stage; a third 2.sup.nd order bi-quad stage operably coupled in a cascade manner to the first and second 2.sup.nd order bi-quad stages, wherein the cascaded first, second, and third 2.sup.nd order bi-quad stages filter the complex time domain sample sequence to produce a multiple order filtered sample sequence; and a gain module operably coupled to amplify the multiple order filtered sample sequence to produce the filtered complex time domain sample sequence as cited in the claims.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Le whose telephone number is 571-272-7892. The examiner can normally be reached on 08:00-05:00 (Mon-Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

N. Le

Nhan Le

4-16-2006

NGUYEN T. VO
PRIMARY EXAMINER